WHAT IS CLAIMED IS:

1. An information storage method comprising:

a first step of inputting information to be stored; and

a second step of autonomically and periodically reproduce representation of said information input in the first step after the representation of the information once changes with a disturbance.

2. The information storage method according to claim 1 wherein the information to be stored is input to a plurality of information carrier storage means that interact with each other.

3. The information storage method according to claim 2 wherein interaction of said information carrier storage means includes nonlinear diffusion of information carriers.

4. The information storage method according to claim 2 wherein interaction of said information carrier storage means includes dissipation of information carriers.

5. The information storage method according to claim 4 wherein said dissipation is nonlinear dissipation.

6. The information storage method according to claim 4 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

7. The information storage method according to claim 3 wherein time development is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)] \quad (4)$$

and

$$f[z(r,t)] = 1 + \frac{1}{1 + \exp[-\beta\{z(r,t) - z_0\}]} \quad (5)$$

8. The information storage method according to claim 1 wherein said disturbance is random addition of information carriers.

9. The information storage method according to claim 1 wherein said disturbance is permutational addition of information carriers.

10. The information storage method according to claim 1 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

11. The information storage method according to claim 4 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed a predetermined threshold value.

12. The information storage method according to claim 1 wherein the first step inputs information carriers expressed by n-dimensional vectors (where n is a natural number) as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

13. The information storage method according to claim 12 wherein said second step includes a step of adding a predetermined amount of information carriers to said

information carrier storage means, then having a predetermined amount of information carriers diffused between a predetermined set of said information carrier storage means, having a predetermined amount of information carriers dissipated from said information carrier storage means, and having the diffusion and the dissipation repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

14. The information storage method according to claim 12 wherein said second step includes a step of having each said information carrier storage means to diffuse information carriers to neighboring ones of said information carrier storage means.

15. An information storage device comprising a function of autonomically and periodically reproducing representation of input information after the representation of the information once changes due to a disturbance.

16. The information storage device according to claim 15 wherein said information is input to a plurality of information carrier storage means that interact with each other.

17. The information storage device according to claim 16 wherein interaction of said information carrier storage means includes nonlinear diffusion of information carriers.

18. The information storage device according to claim

16 wherein interaction of said information carrier storage means includes dissipation of information carriers.

19. The information storage device according to claim 18 wherein said dissipation is nonlinear dissipation.

20. The information storage device according to claim 18 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

21. The information storage device according to claim 17 wherein time development is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)] \quad (6)$$

and

$$f[z(r,t)] = 1 + \frac{1}{1 + \exp[-\beta\{z(r,t) - z_0\}]} \quad (7)$$

22. The information storage device according to claim 15 wherein said disturbance is random addition of information carriers.

23. The information storage device according to claim 15 wherein said disturbance is permutational addition of information carriers.

24. The information storage device according to claim 15 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

25. The information storage device according to claim 18 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed

a predetermined threshold value.

26. The information storage device according to claim 15 wherein information carriers expressed by n-dimensional vectors (where n is a natural number) are input as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

27. The information storage device according to claim 26 wherein a predetermined amount of information carriers is added to said information carrier storage means, a predetermined amount of information carriers is diffused between a predetermined set of said information carrier storage means, a predetermined amount of information carriers is dissipated from said information carrier storage means, and the diffusion and the dissipation are repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

28. The information storage device according to claim 26 wherein each said information carrier storage means is controlled to diffuse information carriers to neighboring ones of said information carrier storage means.

29. An information storage device having the function of reproducing representation of input information autonomically and periodically after the representation of the information once changes due to a disturbance,

comprising:

input means supplied with data expressed by n-dimensional vectors (where n is a natural number);

storage means made up of n pieces of information carrier storage means for storing data input to said input means;

control means for adding a predetermined amount of information carriers to data stored in said storage means, diffusing a predetermined amount of information carriers and dissipating a predetermined amount of information carriers;

random number generator for generating a random number and send it to said controller;

judging means for judging whether the change in amount of information carriers in each said information carrier storage means has become below a predetermined value or not; and

output means for outputting a result of arithmetic operation by said controller.

30. A recording medium having recorded an information processing program so as to have it read by a computer, said program comprising:

a first step of inputting information to be stored;

a second step of autonomically and periodically reproducing representation of information input in said first step after the representation of the information once changes due to a disturbance; and

a third step of outputting information stored.

31. The recording medium according to claim 30 wherein the information to be stored is input to a plurality of information carrier storage means that interact with each other.

32. The recording medium according to claim 31 wherein interaction of said information carrier storage means includes nonlinear diffusion of information carriers.

33. The recording medium according to claim 31 wherein interaction of said information carrier storage means includes dissipation of information carriers.

34. The recording medium according to claim 33 wherein said dissipation is nonlinear dissipation.

35. The recording medium according to claim 33 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

36. The recording medium according to claim 32 wherein time development is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)] \quad (8)$$

and

$$f[z(r,t)] = 1 + \frac{1}{1 + \exp[-\beta\{z(r,t) - z_0\}]} \quad (9)$$

37. The recording medium according to claim 30 wherein said disturbance is random addition of information carriers.

38. The recording medium according to claim 30 wherein said disturbance is permutational addition of information carriers.

39. The recording medium according to claim 30 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

40. The recording medium according to claim 33 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed a predetermined threshold value.

41. The recording medium according to claim 30 wherein the first step inputs information carriers expressed by n-dimensional vectors (where n is a natural number) as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

42. The recording medium according to claim 41 wherein said second step includes a step of adding a predetermined amount of information carriers to said information carrier storage means, then having a predetermined amount of information carriers diffused between a predetermined set of said information carrier storage means, having a predetermined amount of information carriers dissipated from said information carrier storage means, and having the diffusion and the dissipation repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

43. The recording medium according to claim 41 wherein

said second step includes a step of having each said information carrier storage means to diffuse information carriers to neighboring ones of said information carrier storage means.